Immediate or delayed breast reconstruction after mastectomy: what do women really want

Belouli, K ; Wyss, P ; Vetter, S ; Meyer, V E ; Beer, G M

Abstract: Breast reconstruction, especially immediate reconstruction after mastectomy has increased over the last decades, at present being regularly offered in many centres worldwide. Despite obvious benefits and the evident oncological safety of primary breast reconstruction, the majority of women still receive a delayed procedure or even no reconstructive surgery. The objective of the present study was to determine the preference of women for breast reconstruction—immediate or delayed—and in the case of rejection of treatment to find out the reasons for this reluctance. In a prospective study a sample of 200 women—divided into two groups—were evaluated by an oral interview on the subject. The two-formed groups of participants consisted of randomly chosen women (n=100) and non-surgical nurses (n=100). The questionnaire surveyed personal data including marital status and educational level, as well as information about the preferred timing, the method of and the reasons for or against breast reconstruction. The evaluation of all data showed that 66% of the participants voted for additional surgery after mastectomy. Young age and high education level were significantly correlated (age r=0.56, P<0.01; education r=0.25, P<0.01) to the wish for reconstruction. The mean age of all participants was 39years (range 20-69), with a significant difference between the two groups (P<0.01), the group of nurses being younger (mean age 35, range 20-62) and the other women being older (mean age 43, range 20-69). Concerning the timing of reconstruction, 21% of women elected to have an immediate and 27% a delayed operation. Yet, 52% could not come to a decision as to whether they should prefer a primary or secondary procedure. For the surgical procedure—autologous versus non-autologous tissue—about 23% of the participants could not decide spontaneously, while 40% preferred autologous tissue, 14% implants and 23% would choose a combination of both. The main reason in favour of reconstruction was that it would enhance the physical appearance (96%), whereas an important reason for general rejection was the fear of additional surgical risk (19%). For primary reconstruction, a high percentage of women also were highly concerned that reconstruction could mask cancer recurrence (62%). Although the majority of women—unaffected with breast cancer—are interested in breast reconstruction, more than half of them cannot decide spontaneously about the timing and mode of surgery, including the medical women. The collected data emphasize the urgent necessity to systematically inform women and the whole population about the options of breast reconstruction. Equally important is for the involved surgeons to know the individual wishes and fears of women unexpectedly confronted with the diagnosis of breast cancer in order to provide comprehensive preoperative counselling with respect to cancer therapy including breast reconstruction

DOI: https://doi.org/10.1007/s00238-005-0778-3

Originally published at:
Belouli, K; Wyss, P; Vetter, S; Meyer, V E; Beer, G M (2005). Immediate or delayed breast reconstruction after mastectomy: what do women really want. European Journal of Plastic Surgery, 28(5):331-336.
DOI: https://doi.org/10.1007/s00238-005-0778-3

Eur J Plast Surg (2005) 28: 331–336
DOI 10.1007/s00238-005-0778-3

ORIGINAL PAPER

K. Belouli · P. Wyss · S. Vetter · V. E. Meyer
G. M. Beer

Immediate or delayed breast reconstruction after mastectomy: what do women really want

Received: 29 October 2004 / Accepted: 3 May 2005 / Published online: 27 July 2005

Abstract Breast reconstruction, especially immediate reconstruction after mastectomy has increased over the last decades, at present being regularly offered in many centres worldwide. Despite obvious benefits and the evident oncological safety of primary breast reconstruction, the majority of women still receive a delayed procedure or even no reconstructive surgery. The objective of the present study was to determine the preference of women for breast reconstruction—immediate or delayed—and in the case of rejection of treatment to find out the reasons for this reluctance. In a prospective study a sample of 200 women—divided into two groups—were evaluated by an oral interview on the subject. The two-formed groups of participants consisted of randomly chosen women ($n = 100$) and non-surgical nurses ($n = 100$). The questionnaire surveyed personal data including marital status and educational level, as well as information about the preferred timing, the method of and the reasons for or against breast reconstruction. The evaluation of all data showed that 66% of the participants voted for additional surgery after mastectomy. Young age and high education level were significantly correlated (age $r = 0.56$, $P < 0.01$; education $r = 0.25$, $P < 0.01$) to the wish for reconstruction. The mean age of all participants was 39 years (range 20–69), with a significant difference between the two groups ($P < 0.01$), the group of nurses being younger (mean age 35, range 20–62) and the other women being older (mean age 43, range 20–69). Concerning the timing of reconstruction, 21% of women elected to have an immediate and 27% a delayed operation. Yet, 52% could not come to a decision as to whether they should prefer a primary or secondary procedure. For the surgical procedure—autologous versus non-autologous tissue—about 23% of the participants could not decide spontaneously, while 40% preferred autologous tissue, 14% implants and 23% would choose a combination of both. The main reason in favour of reconstruction was that it would enhance the physical appearance (96%), whereas an important reason for general rejection was the fear of additional surgical risk (19%). For primary reconstruction, a high percentage of women also were highly concerned that reconstruction could mask cancer recurrence (62%). Although the majority of women—unaffected with breast cancer—are interested in breast reconstruction, more than half of them cannot decide spontaneously about the timing and mode of surgery, including the medical women. The collected data emphasize the urgent necessity to systematically inform women and the whole population about the options of breast reconstruction. Equally important is for the involved surgeons to know the individual wishes and fears of women unexpectedly confronted with the diagnosis of breast cancer in order to provide comprehensive preoperative counselling with respect to cancer therapy including breast reconstruction.

Keywords Breast cancer · Mastectomy · Breast reconstruction

K. Belouli (✉) · S. Vetter · V. E. Meyer · G. M. Beer
Department of Surgery, Division for Plastic, Hand and Reconstructive Surgery, University Hospital Zurich, 8091 Zurich, Switzerland
E-mail: konstantina.belouli@usz.ch
Tel.: +41-1-2551111
Fax: +41-1-2558977

P. Wyss
Department for Gynaecology and Obstetrics, Academic Medical Centre, University Hospital Zurich, 8091 Zurich, Switzerland

Introduction

Breast cancer is the most common malignancy among women in the Western world, it affects around 1 million women per year worldwide [18]. The surgical management of breast cancer has been rapidly evolving in the last decades towards less invasive procedures. Although

Table 1 List of the personal data collected

	All participants ($n = 200$)		Group 1 ($n = 100$)		Group 2 ($n = 100$)	
	Range	MeanSD	Range	Mean ± SD	Range	Mean ± SD
Age (year)	20–69	39 ± 13	20–69	43 ± 14	20–62	35 ± 11
Height (cm)	150–184	166 ± 7	150–179	166 ± 7	152–184	166 ± 7
Weight (kg)	44–96	62 ± 9	48–80	62 ± 7	44–96	62 ± 10
	Good	Comorbidity	Good	Comorbidity	Good	Comorbidity
General health	86%	14%	79%	21%	93%	7%
	Single	Partner	Single	Partner	Single	Partner
Marital status	26%	74%	18%	82%	33%	67%
	Normal	Private	Normal	Private	Normal	Private
Assurance	75%	25%	72%	28%	78%	22%
	High	Lower	High	Lower	High	Lower
Educational level	65%	35%	30%	70%	100%	0%

General health: good = no comorbidities; Marital status: single = single or widowed; Assurance: normal assurance in Switzerland; Education level: high = university-level. *Comorbidity* one or more comorbidities, *partner* in a permanent relationship or marriage, *private* private or halfprivate assurance, *lower* elementary and high school-level

breast conservation therapy is widely used, still more than one-third of women [15] require mastectomy because of multifocal disease, tumour size or site, inability to achieve adequate margins or patients' strong preference for prophylactic mastectomy [2, 19].

For decades, concomitant to mastectomy the option of breast reconstruction has been available, immediately or delayed. Despite an immediate all-type reconstruction being offered frequently, a delayed breast reconstruction (solely with non-autologous tissue), or even no reconstruction is carried out in many non-plastic surgery breast centres.

The popularity of primary breast reconstruction has increased over the past few years as it provides immediate psychological adjustment to the loss of the breast [9, 21], and, in the case of a skin-sparing mastectomy [10] and immediate reconstruction with autologous tissue, a better cosmetic result than any other alternative without jeopardizing oncological safety [5, 7, 20]. Compared to delayed implant-based-reconstructions it is far more cost-effective with the potential for a single-stage operation and reduced hospitalization [11, 13]. Despite the known drawbacks of immediate, autologous reconstruction, i.e., an increased length of the procedure and a more complex surgery with higher risks, there is a recognisable trend that plastic surgeons tend to prefer autologous breast reconstruction over expander/implant-based reconstructions [11, 14, 16, 20].

In contrast, there are various reports [3, 6] that women do not share these preferences unrestrained. The aim of this study was to investigate the wishes, expectations and fears of women [12] regarding breast reconstruction and in case of rejection to find out the reasons for their reluctance.

Table 2 List of the answers to the following questions: (1) How important is the breast for you in aesthetic view? (2) How self-confident are you?

	All participants $n = 200$	Group 1 $n = 100$	Group 2 $n = 100$
Aesthetic significance of the breast			
1	0%	0%	0%
2	15%	26%	3%
3	23%	21%	23%
4	45%	47%	47%
5	17%	6%	27%
Mean	3.61	3.29	3.97
Self-confidence			
1	0.5%	0%	1%
2	3.5%	4%	3%
3	44%	52%	33%
4	41%	39%	46%
5	11%	5%	17%
Mean	3.60	3.43	3.74

1–5 analogue scale, *1* not at all, *5* very much

Materials and methods

Two hundred women were divided into two different groups, and were prospectively evaluated with a specially developed questionnaire on the subject "breast reconstruction" by an oral interview. The two groups consisted of 100 randomly chosen women (group 1) and 100 non-surgical nurses at the university hospital in Zurich (group 2). The rationale for the group composition was to assess the view of women who have not been personally or only theoretically confronted with the subject of breast reconstruction. There was no information concerning breast reconstruction provided from the interviewer, the women had to give their answers spontaneously.

The only exclusion criterion for all groups was an age younger than 20 and older than 70 years. Participants initially answered questions assessing personal data including age, weight, height, educational level, marital status, general health and country of origin.

In a second part women were asked to express their preference for or against breast reconstruction and also to elect the preferred timing, immediate or delayed.

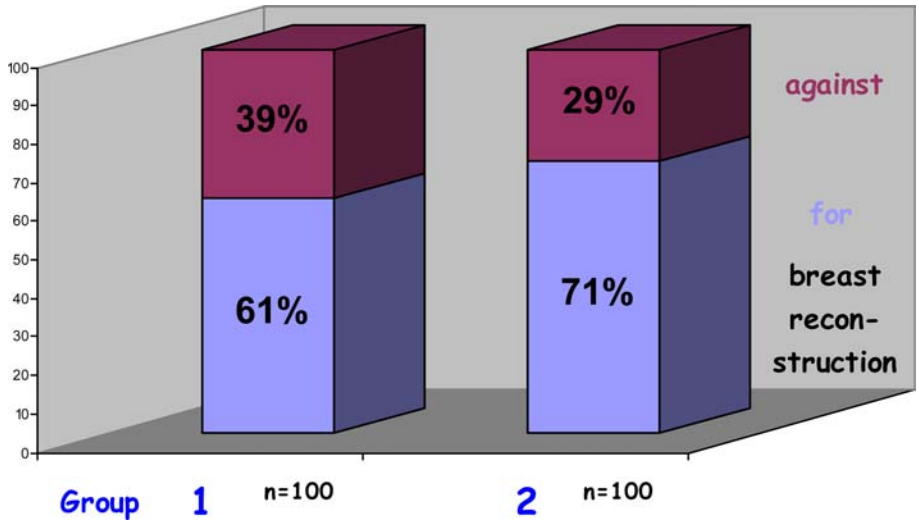

Fig. 1 Distribution of women wishing breast reconstruction or preferring no reconstructive surgery in group 1 (randomly chosen women) and group 2 (non-surgical nurses)

Further they had to choose between the use of autologous tissue, a non-autologous technique with implants or a combination of both and to define the reasons for all their answers. Finally, women's self-esteem and significance of the breast from aesthetic viewpoint was assessed using a visual analogue scale from 1 to 5.

Results were analysed using SPSS 11.0 (SPSS, Chicago, IL, USA). Continuous variables were summarized as mean + SD and were compared between the groups by using the Mann–Whitney test. Nominal variables were presented as *n* (%) and differences were compared by the Fisher's exact test. Correlations between the various reference points were indicated by the Spearman rank correlation. A *P*-value of <0.05 was considered significant.

Results

The collected personal data of all the participants and the two groups separately are listed in Table 1. The only significant difference between the two groups regarding the personal data was the mean age ($P<0.01$), with nurses being younger (mean age 35) and the other women being older with mean age 43. The mean age of all participants was 39 years (range 20–69).

The age of the participants was significantly correlated to the wish for reconstruction. The same applied to the educational level. Significantly younger ($r=0.56$, $P<0.01$), and highly educated women ($r=0.25$, $P<0.01$) were more inclined to undergo reconstructive surgery. Additionally, women with higher self-esteem ($r=0.34$, $P<0.01$) and for those to whom the breast was aesthetically very important ($r=0.62$, $P<0.01$) were more likely to choose breast reconstruction (Table 2). Also high educational level and high self-esteem were significantly correlated with each other ($r=0.26$, $P<0.01$). The other personal data were not significantly correlated to the decision for or against breast reconstruction.

Concerning breast reconstruction, 66% of all participants voted for breast reconstruction. Subgroup analysis revealed that 61% of the first group and 71% of the nurses chose to have a breast reconstruction after mastectomy (Fig. 1).

Table 3 Mainly used arguments for or against breast reconstruction and for immediate or delayed procedure, respectively

Arguments	All participants	Group 1	Group 2
For reconstruction	$n=132^{*}$	$n=61$	$n=71$
Appearance	96%	95%	96%
Do not know	4%	5%	4%
Against reconstruction	$n=62^{*}$	$n=34$	$n=28$
Not important enough	37%	21%	57%
Fear for surgery risks	19%	14%	25%
Patients feel too old	6%	9%	4%
Do not know	38%	56%	14%
For immediate reconstruction	$n=41$	$n=5$	$n=36$
Only one surgical procedure	56%	100%	50%
Psychological benefits	44%	0%	50%
For delayed reconstruction	$n=55$	$n=24$	$n=31$
Fear of cancer recurrence	62%	92%	39%
Need time to deal with having cancer	35%	8%	55%
Do not know	3%	0%	6%

*For reconstruction $n=132$, against reconstruction $n=62$, the rest of the participants ($n=200–132–62=6$) could not come to a decision

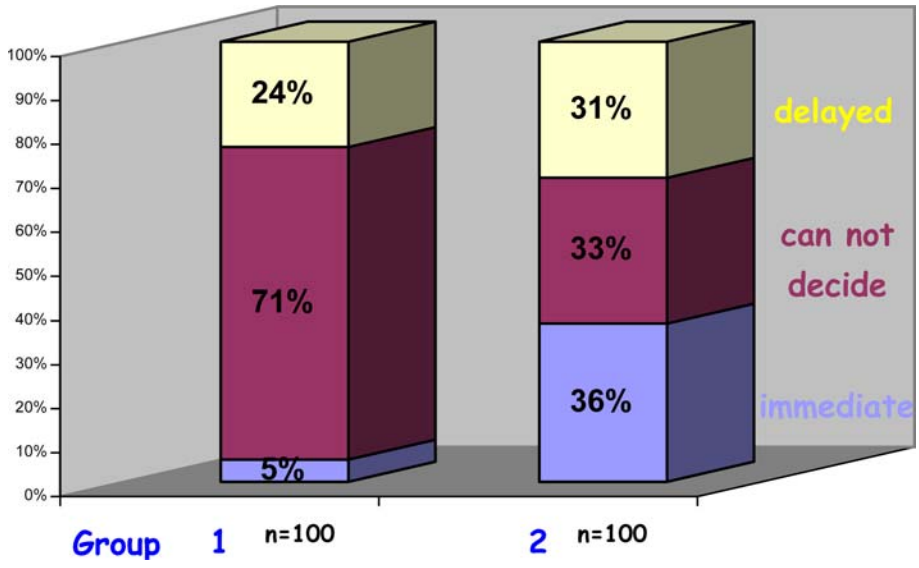

Fig. 2 Rate of women electing immediate or delayed breast reconstruction for group 1 (randomly chosen women) and group 2 (non-surgical nurses)

The most frequently mentioned argument for reconstruction (96%) was that it would enhance the appearance and in that way benefit the relationship with the partner. Parameters affecting the election not to undergo reconstruction were in descending sequence that it would be not important, the fear that it would cause too much additional surgery and pain, or patients assumed they were too old for this kind of therapy (Table 3).

From all the women asked, only 21% elected primary and 27% secondary reconstruction, while 52% could not come to a decision. Subgroup analysis showed that only 5% in group 1 compared to 36% in group 2 expressed a preference for immediate reconstruction (Fig. 2).

The most common reason for immediate reconstruction was the wish to undergo only one surgical procedure (56%), followed by the need to avoid the feeling of mutilation and altered body image (44%) (Table 3).

The concern that reconstruction might mask locoregional cancer recurrence and the need to await the completed cancer therapy was for the majority the most important argument (62%) against primary but for delayed reconstruction. Also the need to deal with the fact of having cancer was for 35% of women prior to immediate reconstructive surgery (Table 3).

For the type of reconstruction, 40% of those who voted for breast reconstruction would favour the use of autologous tissue, 14% the use of implants and 23% a technique combining both methods but 23% could not come to a decision spontaneously. Subgroup analysis for these decisions are listed in Table 4.

Expressing a preference for reconstruction using autologous tissue was due to aversion to foreign substances (especially silicone) in the great majority (87%) of women. On the other hand the confidence of nicer results (63%), the argument of less scars (21%) and less complex surgery (5%) led the women to choose an implant technique.

Table 4 Analysis of the choices of the participants who would vote for breast reconstruction concerning the surgical technique

Surgical procedure	All participants	Group 1	Group 2
	$n=132$	$n=61$	$n=71$
Autologous tissue	40%	21%	55%
Implants	14%	15%	14%
Combination	23%	21%	24%
Do not know	23%	43%	7%

Discussion

This study showed that although one-third of the women in the first group and two-thirds of the nurses would elect breast reconstruction, there was much uncertainty and fear in coming to a spontaneous decision, for example only 5% of the women in the first group voted for primary reconstruction. This shows how far away we are from providing sufficient information to women about reconstruction after breast cancer. All the revealed concerns are a strong argument for better education of all women so that they can form an opinion and understand the required manifold treatment options before they are affected with breast cancer. In such a life-altering and possibly life-threatening situation often women are not able to additionally deal with the different available options of breast reconstruction and postpone or reject reconstructive surgery.

The significantly higher vote in favour of breast reconstruction in the nurse group might be mainly due to their specific medical education and in addition to their younger age. Body image-related and appearance-related issues are usually equally important for young women as complete cure of breast cancer including adjuvant therapies.

Not surprising was also the fact that highly educated and self-confident women voted for breast reconstruction significantly more often than the rest of the participants. This is in accordance with other studies [17] with similar groups, which showed that women electing to have breast reconstructive surgery are often young, with full-time employment and have a permanent relationship or marriage.

Concerning the timing and type of reconstruction the most striking finding was that more than half of the interviews could not give a spontaneous answer. Even more embarrassing, the majority of women were concerned that additional immediate surgery would mask cancer recurrence. This finding shows that women (and general physicians [3]) are still not well informed about the widely approved oncological safety of immediate breast reconstruction.

Despite all information, the discussion about the adequate type of reconstruction will remain controversial. In our study, more participants would elect a reconstruction with autologous tissue compared to a non-autologous (or combined) reconstruction, a result that seems to be influenced by the widespread aversion to silicone [14], the risk of capsular fibrosis, and the limited lifetime of the implants thus requiring more operations in the future. In contrast to the opinion of many plastic surgeons, a recent study [4], which evaluated the opinion of both surgeons and patients after breast reconstruction concerning the different types available, showed that the patients preferred the early postoperative result with implants more than with the autologous technique. This emphasizes the fact that women take into account not only the morphological outcome but also many other factors such as the comfort of reconstruction and postoperative pain. It has to be considered that patients' fears and evaluations of aesthetic outcomes may differ from those of surgeons [1]. The patient's decision is the only justification for reconstructive surgery, not our surgical ambitions [4].

Many studies have documented the psychosocial, emotional and functional benefits of breast reconstruction including improved psychological health, self-esteem, sexuality and body image [21]. This study highlights the personal wishes and fears of a representative sample of women in Zurich, their concerns about anticipated postoperative appearance, surgical risks and cancer recurrence. The necessity of providing comprehensive information to the whole population about breast cancer and the main options of therapy and reconstruction is clearly shown. It is emphasized that the knowledge of these factors affecting the desire of patients for reconstruction is beneficial for the involved surgeons in terms of providing adequate and complete presurgical information, discussion and support. These findings reinforce the need for careful counselling about available options and the objective pros and cons of different techniques, so that women can make an informed decision concerning breast reconstruction [8] and have realistic expectations of cosmetic, sensory and functional outcomes. This consequently leads to higher satisfaction in patients and surgeons.

References

1. Alderman AK, Wilkins AG, Lowery JC, Kim M, Davis JA (2000) Determinants of patient satisfaction in postmastectomy breast reconstruction. Plast Reconstr Surg 106(4): 769–776
2. Baker C, Johnson N, Nelson J, Homer L, Walts D, Waldorf K, Boardman K (2002) Perspective on reconstruction after mastectomy. Am J Surg 183:562–565
3. Bronz G, Bronz L (2002) Mammary reconstruction with skin-expander and silicone protheses: 15 years experience. Aesth Plast Surg 26:215–218
4. Bruant-Rodier C, Mathelin C, Rodier JF, Kjartansdottir T, Meyer N (2004) Immediate breast reconstruction: who is more satisfied, the surgeon or the patient? Eur J Plast Surg 27:4–7
5. Chawla AK, Kachnic LA, Taghian AG, Niemierko A, Zapton DT, Powell SN (2002) Radiotherapy and breast reconstruction: Complications and cosmesis with TRAM versus tissue expander/implant. Int J Radiation Oncol Biol Phys 54(2):520–526
6. Clough KB, O'Donoghue JM, Fitoussi AD, Nos C, Falcou M-C (2001) Prospective Evaluation of late cosmetic results following breast reconstruction: I. Implant reconstruction. Plast Reconstr Surg 107(7):1702–1709
7. Danforth DN (2000) Comments on skin-sparing mastectomy and immediate breast reconstruction: a critical analysis of local recurrence. Cancer J 6(5):285–286
8. Finlayson CA, MacDermott TA, Arya J (2001) Can specific preoperative counselling increase the likelihood a woman will choose postmastectomy breast reconstruction? Am J Surg 182:649–653
9. Harcourt DM, Rumsey NJ, Ambler NR, Cawthorn SJ, Reid CD, Maddox PR, Kenealy JM, Rainsbury RM, Umpleby HC (2003) The psychological effect of mastectomy with or without breast reconstruction: a prospective, multicenter study. Plast Reconstr Surg 111:1060–1068
10. Hidalgo DA (1998) Aesthetic refinement in breast reconstruction: complete skin-sparing mastectomy with autogenous tissue transfer. Plast Reconstr Surg 102(1):63–70
11. Hudson DA, Skoll PJ (2001) Single-stage, autologous breast reconstruction. Plast Reconstr Surg 108(5):1163–1173
12. Keith DJW, Walker MB, Walker LG, Heys SD, Sarkar TK, Hutcheon AW, Eremin O (2003) Women who wish breast reconstruction: characteristics, fears and hopes. Plast Reconstr Surg 111(3):1051–1059
13. Khoo A, Kroll SS, Reece GP, Miller MJ, Evans GRD, Robb GL, Baldwin BJ, Wang G, Schustermann MA (1998) A comparison of resource costs of immediate and delayed breast reconstruction. Plast Reconstr Surg 101(4):64–970
14. Kroll SS, Baldwin B (1992) A comparison of outcomes using three different methods of breast reconstruction. Plast Reconstr Surg 90(3):455–462
15. Malata CM, McIntosh SA, Purushotham AD (2000) Immediate breast reconstruction after mastectomy for cancer. Br J Surg 87:1455–1472
16. Robbins TH (1979) Rectus abdominis myocutaneous flap for breast reconstruction. Aust N Z J Surg 49(5):527–530
17. Rowland JH, Dioso J, Holland JC (1995) Breast reconstruction after mastectomy: who seeks it, who refuses it? Plast Reconstr Surg 95:812–822
18. Sakorafas GH (2001) Breast cancer surgery. Historical evolution, current status and future perspectives. Acta Oncologica 40:5–13

19. Singletary SE (2001) New approaches to surgery for breast cancer. Endocr Relat Cancer 8:265–286
20. Slavin SA, Schnitt SJ, Duda RB, Houlihan MJ, Koufman CN, Morris DJ, Troyan SL, Goldwyn RM (1998) Skin-sparing mastectomy and immediate reconstruction: Oncological risks and aesthetic results in patients with early-stage breast cancer. Plast Reconstr Surg 102(1):49–62
21. Wilkins EG, Cederna PS, Lowery JC, Davis JA, Kim HM, Roth RS, Goldfarb S, Izenberg PH, Houin HP, Shaheen KW (2000) Prospective analysis of psychosocial outcomes in breast reconstruction: one-year postoperative results from the Michigan breast reconstruction outcome study. Plast Reconstr Surg 106(5):1014–1025